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**Anatomy of Cyperaceae.**—The comparative anatomy of the Cyperaceae has been studied by PLOWMAN,<sup>31</sup> and as usual the chief interest centers in the stem. Amphivasal bundles are found throughout the rhizomes of all large-leaved species and at the nodes of aerial stems; elsewhere the bundles are collateral. The amphivasal bundles arise through the introduction into the node of the numerous leaf-trace bundles, and are independent of the branching of the stem. Hence the leaf is to be regarded as the dominant factor in the development of the stelar characteristics of the family and probably of the other monocotyledonous families. The course of the bundles in the rhizome approaches the "palm type," but in the culm the leaf-trace bundles pass down as cortical bundles through one internode and then fuse with the bundles of the central cylinder by a ring-like amphivasal plexus. The seedling and in some cases the floral axis show a simple tubular stele, which is to be regarded as the primitive condition, in contrast with the medullary and amphivasal bundles occurring in many parts of the plant. A cambium is present in the bundles at the nodes of *Scirpus cyperinus* and other species. These features indicate that the Cyperaceae is one of the more primitive groups of monocotyledons, though showing signs of specialization and reduction, accompanied by a high degree of anatomical unity. The view which derives the monocotyledons from an essentially dicotyledonous ancestry receives further support. The author proposes a division of the family into "Amphivasae" and "Centrivassae;" he also gives a key to the genera, based on anatomical characters. The paper is accompanied by a number of excellent photomicrographs.—M. A. CHRYSLER.

**Origin of Cycadaceae.**—WORSEDELL<sup>32</sup> has published a *résumé* of his views as to the origin of the Cycads from the Pteridosperms, with full bibliography. The part dealing with the origin of axial structures is of greatest interest; and the thesis is that the Medullosan ancestry is clear. It is claimed that the cotyledonary node and the axis of the strobilus are the two principal regions for revealing ancestral characters. Much stress is laid upon MATTE's discovery of polystely in the cotyledonary node of *Encephalartos Barteri*; and also upon the very irregular orientation of the bundles of the peduncle of *Stangeria*. According to the author's view, the endarch cylinder of *Lyginodendron* and of the Cycads is of polystelic origin, coming from Medullosan ancestors, each constituent bundle being the homologue of the single bundle of the monostelic *Heterangium*. The endarch condition arises from the degeneration of the internal vascular tissues. Numerous illustrations are given, intended to show how the various vascular structures of both Pteridosperms and Cycads suggest this view and are most easily explained by it. The whole presentation is

<sup>31</sup> PLOWMAN, A. B., The comparative anatomy and phylogeny of the Cyperaceae. *Annals of Botany* 20:1-33. pls. 1-2. 1906.

<sup>32</sup> WORSEDELL, W. C., The structure and origin of the Cycadaceae. *Annals of Botany* 20:129-159. figs. 17. 1906.